

The 3rd Brazilian Meeting on Evolution of Human Behavior



April 10-12, 2019
Brasília, Brazil

The 3rd Brazilian Meeting on Evolution of Human Behavior

University of Brasília, April 10 – 12, 2019

The 3rd Brazilian Meeting on Evolution of Human Behavior is a result of the efforts of the Brazilian researchers interested in the study of human behavior in an evolutionary perspective. Since the first edition in Gramado in 2015, the Brazilian Meetings promoted the integration and debates regarded the evolutionary disciplines to understand human mind and behavior in its uniqueness and relatedness to other species in nature. Following the success of the 2nd Brazilian Meeting on Evolution of Human Behavior (BrMEHB) held in Natal, in 2018; the 3rd BrMEHB is the second event to take place in two consecutive years, showing how the Brazilian researchers are committed to the endeavor of promoting evolutionary science.

On this edition, we intended to highlight the scientific achievements of women in the evolutionary sciences. Our plenary speakers are experts on the fields of animal behavior and cognition, human emotions, social cognition, mate selection, sexual orientation, and human development to mention a few. We believe that bringing into attention women participation in science will not only acknowledge their fundamental contribution in the advance of sciences in general, but will encourage young women to follow this career.

We also choose to pay tribute to the history of the city that holds the event, selecting the monument of “Dois Candangos” (Two Candangos) as the symbol of the Meeting. The meaning of this monument is described in the following session.

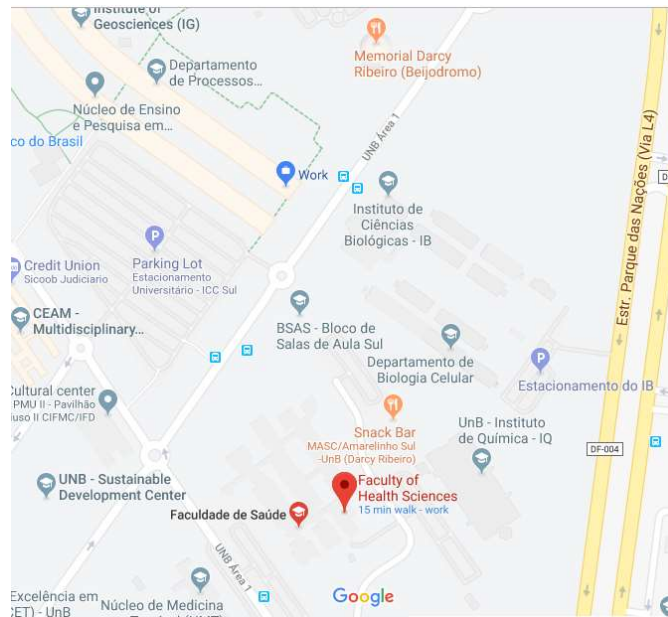
The venue is the Auditorium 3, Faculty of Health Sciences (Faculdade de Ciências da Saúde – or simply FS at the University of Brasília). Only the local of the minicourses are outside of the Auditorium 3, FS. They are indicated on our website and advertised on previous communication.

We hope that the event might be an enriching experience for you all as has been being for us of the Organization Committee.

Our sincerely regards,

Mauro Silva Júnior

The venue:



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Funding



Support:

Faculdade de Ciências da Saúde/ Universidade de Brasília

Instituto de Psicologia/ Universidade de Brasília

Instituto de Biologia/ Universidade de Brasília

Cover photo: Mauro Silva Júnior – Dois Candangos, Brasília, Brazil.

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The Two Candangos

The Two Candangos is a monument placed at the Praça dos Três Poderes, a square in the midpoint of the administrative region in Brasília. It is facing the presidential palace, it's backed by the supreme court, and it is in the same line with legislative building, also known as the house of the people.

The Two Candangos first name was Two Warriors, named by its artist Bruno Giorgi in 1959. It is an 8 meters tall bronze statue representing two figures of importance in the history of Brasília. The city of Brasília was built to be the new capital of Brazil, being founded on April 21, 1960 after a few years of construction since its planning was designed by Lúcio Costa, Oscar Niemeyer, and Joaquim Cardoso in 1956. Due to its modernistic architecture Brasília was chosen by UNESCO as World heritage Site, taking part into the Creative Cities Network. Despite all this glamour, Brasília is considered a very expensive city, where wealth concentration is very high, even for Brazilian standards. This concentration contrasts at odds with many of its close administrative regions, called satellite cities, such as Ceilândia where poverty prevails.

Since Brasília was built almost from nowhere, many workers had to come to here to build it. They came mainly from North and Northeast and worked under precarious conditions. During its former days, two bricklayers died buried, causing commotion among the coworkers. The two figures of the monument of Two Candangos are meant to represent those bricklayers, Expedito Xavier Gomes e Gedelmar Marques.

The word “candango” has ambiguous origins, in which some of the meanings are the workers who came to Brasília to build the city, but also can be “ordinary people”, “bad”, synonymous of the outsider workers. Other meaning for Candango include handyman, a person who the only function serves to carry weight, ear-dry, worker who uses 1% of the brain and 99% of muscles; and pawn. Nowadays, candango refers to those people who are born in the city of Brasília.

Sources:

<https://en.wikipedia.org/wiki/Bras%C3%ADlia>

<https://www.dicionarioinformal.com.br/candangos/>

<https://brasilimperdivel.tur.br/doi-guerreiros-os-candangos/>

Organization Team

The Host Committee

Dr. Mauro Silva Júnior – University of Brasília – Chair

Dr. Fívia Lopes – Federal University of Rio Grande do Norte

Dr. Raphael Cardoso – Pontifical Catholic University of Goiás

The Organizing Committee

Nicolly Papacidero – University of Brasília

Lívia Souza – University of Brasília

Leonardo Boaventura Martins – University of Brasília

Maria Luiza Rodrigues – University of Brasília

Polliana Teixeira da Silva – University of Brasília

Júlia Leme – University of Brasília

Emilly Ferreira – University of Brasília

Mateus Teixeira – University of Brasília

Monitors

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The Scientific Committee

Dr. Anuska Irene de Alencar

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Dr. Fívia de Araujo Lopes

Dr. Hellen Vivianni Veloso Corrêa

Dr. Jaroslava Varella Valentova

Dr. Marco Antonio Correa Varella

Dr. Rachel Coêlho Ripardo Teixeira

Dr. Raphael Moura Cardoso

Dr. Renata Pereira de Felipe

Dr. Rosana Suemi Tokumaru

Dr. Rui de Moraes Junior

Dr. Victor Kenji Medeiros Shiramizu

Plenary Talks

Keynote address: *Love or Lack of Love: Jealousy as an adaptation to protect close attachment Bonds.*

Dr. Ana Maria Fernandez – University of Santiago of Chile

Talk I: *The effect of environmental cues of harshness and unpredictability on health-risk behaviors in young populations*

Dr. Dandara Ramos – CIDACS (Center for Data and Knowledge Integration for Health), Fiocruz Bahia, Brazil

Talk II: *Sex differences in the motivations for intergroup bias: Male warriors and female defenders*

Dr. Melissa McDonald – Oakland University

Talk III: *Sexual Orientation from the Evolutionary Perspective*

Dr. Jaroslava Valentova – University of São Paulo

Talk IV: *Why do birds use tools?*

Dr. Sabine Tebbich – University of Vienna

Talk V: *Evolutionary Origins of Morality: Insights from nonhuman primates*

Dr. Judith Burkart – University of Zurich

The Program

Wednesday 10th

Mini-courses – 8:30 am – 12:00 am

1. **Evolutionary Psychopathology** – Dr. Fívia Lopes

Local: Auditorium 2 – Institute of Biology, University of Brasília

2. **Female Empowerment in Science** – MSc. Phiética da Silva and MSc. Melina Vaz

Local: Auditorium 3 – Institute of Biology, University of Brasília

3. **Evolution of language: contributions and limits of the comparative method** - Dr. Francisco Mendes

Local: Auditorium AT 141 – Institute of Psychology

4. **The Evolution of the normative mind: a coevolutionary theory of the relation between genetics, psychology, culture, and institutions** - Dr. Fábio Portela

Local: Auditorium 1 – Institute of Biology, University of Brasília

5. **Artificial Intelligence: Evolutionary Algorithms and Softwares** - MSc. Gabriel Aranha

Local: Psychobiology Lab. – Institute of Psychology

6. **The Evolution of Artistic Propensions** - Dr. Marco Antonio Correa Varella

Local: Auditorium 4 – Institute of Biology, University of Brasília

Local: Auditório 3 – Faculdade de Saúde

2:00 – 2:30

Opening Ceremony

2:30 – 4:00

Thematic Session – Individual Differences

Gender differences in pathological jealousy	Andrea Stravogiannis, Hermano Tavares
The influence of Dark Triad and sociosexuality on mating and parenting efforts: A cross-cultural study	Francisco Moraes Junior, Zuzana Štěrbová, Marco Antonio Correa Varella, Maryanne Fisher, Jaroslava Varella Valentova
Short-term mate choice criteria in transgenders	Rodrigo Gomes, Felipe Nalon Castro

4:00 – 4:20

Coffee break

4:30 – 6:00

Thematic Session on Art and Justice:

Beyond the hypothesis of "Third-party Punishment": an evolutionary explanation for the effectiveness of Restorative Justice procedures	Ricardo Horta
High intrinsic motivations for artistic careers between 1987-2018: specificity and stability as evolved features of artistic propensities	Marco Varella
Extra-class artistic activities as an indicator of intrinsic motivation: evidence from a large Brazilian sample from 1987 to 2004	Marco Varella

6:00 – 7:00

Keynote Address: *Love or Lack of Love: Jealousy as an adaptation to protect close attachment Bonds.*

Dr. Ana Maria Fernandez – University of Santiago of Chile

Thursday 11th

Local: Auditório 3 – Faculdade de Saúde

9:00 – 10:00

Plenary Talk I: *The effect of environmental cues of harshness and unpredictability on health-risk behaviors in young populations.*

Dr. Dandara Ramos – CIDACS/FIOCRUZ/Bahia

10:00 – 10:20

Interval

10:20 – 12:00

Thematic Session on Evolution of Behavior

Tufted capuchin monkeys' tool use: from naturalistic observation to field experiments.	Dr. Eduardo Ottoni
Simple minds, and the complex behavior of fish	Dr. Eduardo Bessa
Multilevel Approach to Social Cognition: prosocial and deceptive behavior	Dr. Ronaldo Pilati

2:00 – 3:00

Plenary Talk II: *Sex differences in the motivations for intergroup bias: Male warriors and female defenders.*

Dr. Melissa McDonald – Oakland University

3:00 – 5:00

Poster Session and Coffee break

5:00 – 6:00

Plenary Talk III: *Adaptiveness of the sexual orientation spectrum: Resolving the seeming evolutionary puzzle of homosexuality*

Dr. Jaroslava Valentova – University of São Paulo

Friday 12th

9:00 – 10:00

Plenary Talk IV: *Why do birds use tools?*

Dr. Sabine Tebbich – University of Vienna

10:00 – 10:20

Interval

10:20 – 12:00

Thematic Session on Social Behavior

Correlates of social variability in tufted capuchin monkeys, genus <i>Sapajus</i>	Dr. Patrícia Izar
The Evolution of Cultural Practices from the Behavior Analysis Perspective: a necessary interface	Dr. Laércia Vasconcelos
Social Behavior: influence of values in a cross-cultural perspective	Dr. Claudio Torres

2:00 – 3:30

Thematic Session on Mate Choice

Do women frequently use make-up to attract mates or to compete rivals?	Anthonieta Mafra, Natália Machado Anchieta, Caio Santos Alves da Silva, Luana Oliveira da Silva, Renata Pereira de Felipe, Marco Antônio Correa Varella, Roberta Tokumori Hokama, Jaroslava Varella Valentova
Rejection of behaviors by heterosexual women in idealized mates for long-term relationship	Luiza Penha Pinheiro, Alda Loureiro Henriques
Female sexual satisfaction as a tool for partner choice	Caio Santos Alves da Silva, Hellen Vivianni Veloso Corrêa, Regina Célia Gomes de Sousa, Jaroslava Varella Valentova

3:30 – 4:30

Plenary Talk V: *Evolutionary Origins of Morality: Insights from nonhuman primates.*

Dr. Judith Burkart – University of Zurich

4:30 – 4:50

Coffee break

5:00 – 5:30

Closing ceremony and awards of best oral presentation and poster

Abstracts

Main Talks

Love or lack of love? Jealousy as an adaptation to protect close attachment bonds

Ana Maria Fernandez

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We will review and discuss the evidence that jealousy is an emotion designed to protect valued relationships that are threaten by an interloper, particularly in the realm of reproductive affairs. We will look at the function of sex differences in jealousy for protecting parental investment of men and women specifically, and then we will take a look at the developmental trajectory of jealousy, emerging as a powerful internal regulatory variable that is critical for mother-infant attachment, and then protecting friendships in infancy and puberty. We will analyze the available experimental evidence that this emotion appears early in life and is designed by natural selection to maintain close attachment between the infant and the mother, and then it follows the developmental pathway of protecting the crucial attachments of the individual across the lifespan. We will show our experimental data on children, friendships and romantic relationships, which support that jealousy is critical for the protection of close bonds, and the role of individual differences in attachment affecting this emotion.

Why do birds use tools?

Sabine Tebbich

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Department of Behavioural Biology, University of Vienna

For a long time, research on animal tool-use has focused on the mechanistic and ontogenetic level. The main question fuelling this approach was whether the underlying mechanism of seemingly complex tool-use is similar in humans and animals and for this reason, most studies have been conducted on primates and apes, our closest relatives. Thereby, the selective forces leading to the evolution of tool-use and the ecological relevance of this behaviour have been largely ignored. More recent research on tool-using birds has revealed that distantly related and comparably small-brained animals also display complex tool-oriented behaviour. I will use data on tool-using woodpecker finches and New Caledonian crows to present a more comprehensive picture encompassing both the mechanisms and the ecological context underlying this behaviour. In my talk will also emphasize the importance of an integrative, animal-centred approach in studying physical cognition. With respect to the design and implementation of experiments for testing physical cognition, this means implementing experiments that are

tailored to the real challenges that a species encounters in the wild and also evaluating outcomes within a comparative framework to identify potential adaptive specializations.

Adaptiveness of the sexual orientation spectrum: Resolving the seeming evolutionary puzzle of homosexuality

Jaroslava Varella Valentova

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Heterosexuality has been accepted as a standard default, possibly because it is easy to see its biological/evolutionary relevance. Contrarily, homosexuality presents an evolutionary puzzle because it impedes reproduction. However, besides the ultimate evolutionary function, sexuality gained many other functions during its evolution, which can indirectly enhance reproduction. Therefore, many forms of sexuality do not per se offer direct reproductive success of the individual, but still offer other adaptive social and sexual functions. Importantly, sexual orientation is a psychological mechanism that generates a continuous array of individual variation and not a dichotomous psychological trait. Usually, (non)adaptiveness of the extreme point within the continuum (exclusive homosexuality) is discussed, while variation along the whole continuum of sexual orientation (e.g., predominantly heterosexual, bisexual, predominantly homosexual, etc.) is ignored. Even if exclusive homosexuality does not have any possible adaptive value, the majority of variation on the continuum of sexual orientation can offer adaptive advantages to their carriers. I will outline theories explaining nonheterosexual orientations as adaptive strategies, or as by-products of different adaptations. I will show data on different configurations of sexual orientation, and stress the fact that the majority of non-heterosexual orientations do not present a puzzle for evolutionary thinking.

The effect of environmental cues of harshness and unpredictability on health-risk behaviors in young populations.

Dandara Ramos

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Underage drinking and drunkenness, drug use, unprotected sex, and other forms of health-risk behaviors are closely related to increased morbidity and mortality for young populations, and therefore represent major public health challenges. This talk will focus on integrating evolutionary theory and social epidemiology to approach the study of contextual effects on health-risk behaviors, drawing from large study of culturally diverse samples. Presenting some insights from a public health perspective of life history theory,

the findings presented on this talk point to the benefits of intervening not only on indicators of health-risk in young populations directly, but also in their city environments, reinforcing the need to consider synergies between people's life experiences and the conditions where they live, when studying health-risk behaviors in young populations.

Sex differences in the motivations for intergroup bias: Male warriors and female defenders

Melissa McDonald

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Oakland University

Intergroup conflict, warfare, prejudice, and discrimination are a pervasive feature of human societies. A large literature has documented a clear pattern in which men are more likely to be both the instigators and recipients of this intergroups bias. Social psychological theories of intergroup bias are not equipped to explain this sex-differentiated pattern and evolutionary theories have focused primarily on the male psychology of prejudice, at the exclusion of women's psychology. Here I will argue that coalitional conflict throughout human evolutionary history has posed different challenges and opportunities for men and women, given their distinct reproductive strategies, and has differentially shaped the psychology of intergroup bias among men and women. Within this evolutionary framework, I will discuss two hypotheses: (1) The *male warrior hypothesis* posits that men's bias against outgroups is motivated by the ultimate desire to establish dominance over other groups so that resources can be acquired and protected; (2) The *female-defense hypothesis* posits that women's bias against outgroups is motivated by the ultimate desire to maintain control over reproductive choice. I will describe the theoretical underpinnings, empirical support, and future directions for each of these hypotheses.

Evolutionary Origins of Morality: Insights from nonhuman primates.

Judith Burkart

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Department of Anthropology, University of Zurich

The aim of this presentation is to explore the origins of moral behavior and its underlying moral preferences and intuitions from an evolutionary perspective. Based on experimental and behavioral data from nonhuman primates, I will argue that several elements of morality are not unique to humans, and that the distribution of these elements among primates suggests that they may well follow different evolutionary trajectories. In particular, I will focus on three elements of morality, i.e. (i) prosocial concern, which likely evolved in the context of shared infant care, (ii) sensitivity to social norms, which may be traced back to the last common ancestors of humans and chimpanzees, and (iii) a concern for reputation, which may be absent among non-human primates. I will discuss these results by suggesting that the unique coincidence of elements of morality in humans and not in any other primate is best understood if human moral preferences are construed as adaptations to the affordances of the hunter-gatherer lifestyle of our hominin ancestors.

Tufted capuchin monkeys' tool use: from naturalistic observation to field experiments

Eduardo Ottoni

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Universidade de São Paulo

The degree of terrestriality may explain the difference between the virtual absence of tool use by forest populations of tufted capuchin monkeys (*Sapajus* sp.) and the typical toolkit of savannah groups - stone "hammers" to open defended food. In addition, the degree of diversification of lithic tool use can be related to local availability of proper stones. The much narrower distribution of customary probe tools' use, though, cannot be accounted for by environmental affordances or dietary differences. Group sizes may influence toolkits' sizes (chances of innovation and social learning); social diffusion, however, may also depend on the conspicuousness and permanence of the tools, their use, and its remains. Nutcracking is highly conspicuous, and leaves lasting environmental changes, enabling both direct observation and delayed stimulus enhancement; ontogenetic studies showed that infants' interest in nutcracking, and adults' tolerance to scrounging, optimize opportunities for socially biased learning. Stick probes' production and use, however, are brief, less conspicuous events, creating fewer opportunities for social learning. Beyond observational studies, field experiments are providing harder evidence on the socially mediated diffusion of new behaviours - with the aid of new statistical tools, and on the consequences of different toolkits in the solution of new foraging tasks.

Keywords: capuchin monkeys, tool use, behavioural traditions.

Funding: FAPESP, CNPq, Capes

Simple minds, and the complex behavior of fish

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Human cognitive capacity is often explained based on our need to cope with the complex interactions and demands of large social groups. Studies on primates have supported the claim that social complexity favors brain development, reporting cases of cooperation, cheating, social ranking and punishment. Recent studies, however, have shown similar phenomena in animals with much simpler nervous systems, such as fish. Despite of the lack of a neocortex, studies published in the last two decades have suggested that fish may cooperate with social partners, differentiate individuals and remember the outcome of their previous encounters, care for their reputation, learn

strategic patterns, cheat in feeding interactions and be punished by doing so. These findings indicate that complex social interactions may be less demanding, in terms of brain power, than previously thought. Otherwise, they can mean that social interactions should be more broadly understood, including other ecological interactions. Studies on the evolution of human cognition and behavioral complexity should include more diverse and simpler models, such as fish.

Multilevel perspective in Social Cognition: Prosocial and Dishonest behavior

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Social cognition is a field born within social psychology, as a strategy to unify the scattered research done in the discipline along the first eight decades of 20th century. As a discipline dealing with human behavior, it is multilevel in its essence. The study of prosocial behavior that is part of the agenda of several scientific disciplines (such as evolution, psychology, economics, political science) has been receiving significant contributions from a multilevel perspective. The identification of antecedents in multilevel models has brought lights to our understanding of this fascinating phenomena. More recently the multilevel perspective brought new understanding of dishonest behavior, a kind of antonym of prosocial behavior. For instance, the multilevel model of antecedents of corrupt behavior (MAC) is a contribution. A multilevel perspective presents us several challenges, such as avoiding the dazed effect of our discipline, communicating to a broader audience, developing classifications of proximal and distal effects. A positive attitude toward a multilevel perspective involves a kind of ‘multilevel doctrine,’ in which we are already open to accept the fact that the phenomena we investigate are far more complex than the imaginary boundaries of our departments daze us to believe. Phenomena give a damn to disciplinary boundaries.

Correlates of social variability in tufted capuchin monkeys, genus *Sapajus*

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Department of Experimental Psychology, USP

The comparative study of closely related species can help to identify the contribution of environmental factors to primate social systems. We compared ecological features and social behavior of three species of the genus *Sapajus*, *S. nigritus* in Carlos Botelho State Park (PECB), an area of Atlantic Forest in São Paulo state, *S. xanthosternus* in Una (UNA) Biological Reserve, an area of Atlantic Forest in the Bahia state, and *S. libidinosus* in Fazenda Boa Vista (FBV), a semi-arid habitat in Piauí state, Brazil. *S. xanthosternus* and *S. libidinosus* perceived higher predation risk than *S. nigritus*. In the three studied

populations, capuchin monkeys fed on fruits in usurpable sources of variable size, small to intermediate in PECB, small to large in FBV, and intermediate to large in ReBio Una. Females in FBV compete directly for usurpable foods, are philopatric, and establish a linear dominance hierarchy, with nepotistic coalitions. Females in PECB do not compete directly for food, can disperse, and do not establish hierarchical relationships. Females social relationships in ReBio Una are not sufficiently explained by features of food sources alone: they present greater tolerance than expected and compete significantly with males in food sources, suggesting an effect of predation risk. Grooming relations in the three populations are not sufficiently explained by the models, indicating that the benefits of grooming can be multiple and not only the acquisition of allies in hierarchical disputes. The group size and cohesion varied according to the balance between food abundance and predation risk, with maximum group size and greater cohesion in ReBio Una and FBV, and lower values in PECB where predation risk was lower. The highest sex ratio found in ReBio Una also favors the hypothesis that males are more efficient in group protection against predators. The mating system varied more with variation in sex ratio of the groups than with variation in ecological features of the areas, favoring the hypothesis that mating systems result from male capacity of female monopolization and female strategies to avoid male coercive strategies. In conclusion, the social system of *Sapajus* varies with ecology and demography.

The Evolution of cultural practices from "Behavior Analysis" perspective: A necessary interface

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In the history, seminal studies on cultural phenomena have been developed in different areas of knowledge, especially in the social sciences for millennia and across cultures. Cultural studies from the perspective of Behavior Analysis use data obtained in different areas of knowledge to develop a comprehensive functional analysis of complex cultural phenomena. Such complexity involves a long line in time, multiple agents and institutions and/or sectors involved. The relationships between culture, ethics and technology in B. F. Skinner, show concerns about the future of mankind and how behavioral technology could be used to improve present and future (Melo, Castro & de Rose, 2015). At the cultural level of analysis, operant lineages are replicated between individuals, which have been termed cultural practices. In these, topographic similarity is observed and can result in a social cumulative product that may involve a high risk for the survival of the individuals (e.g., consumption of alcohol, cigarettes and illicit substances and adverse effects on health; high speed and traffic accidents, with 1.25 million deaths; high consumption of foods with low nutritional content and high caloric content and increased disease, with 3.5 million deaths a year from diabetes and high sugar levels). In addition to the macrobehaviors, another matrix describes the transmission of culturo-behavioral lineages, maintained in metacontingencies. These are formed by interlocking behavioral contingencies (IBCs) that result in aggregate product (AP) for a social group. IBCs \square APs are selected for cultural consequences outside of this arrangement (e.g., interlocking cooperative networks and the aggregate production of schools and universities to society

– the new professionals and researchers (APs); interlocking networks in a health system and the service offered to society (AP)) (Glenn et al, 20186). The work market; regulatory agencies of education and health systems; International organizations (e.g., UN, UNESCO) can act as a selective environment (cultural consequences) for these IBCs and their respective products (APs). It is worth emphasizing the complementarity between the levels of phylogenetic, ontogenetic and cultural selection, with different time lines: billions of years; in the course of the life of individuals; to several generations, respectively. This presentation will highlight the contributions of cultural studies of the Analysis of Behavior in interface with different areas of knowledge.

Social Behavior: influence of values in a cross-cultural perspective

Cláudio V. Torres

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The culture concept has been used as a predictor of several social behaviors. Among the different perspectives in the study of culture as a predictor, cross-cultural psychology investigations have tested differences among samples of nations in order to establish sources of social behavior, both at the individual and national levels. Typically, these investigations search for the variance in social phenomena which explained by human values. Actually, the centrality of values in cross-cultural research has more than doubled over the last three decades. At the individual level, values express broad, trans-situational motivational goals, affecting individuals' interpretation of situations, preferences, choices, and actions. At the national level, values reflect the solutions groups develop in response to existential challenges and relate to the way social institutions function. This presentation reviews the role of values at each level and presents the main models of values adopted, showing the value of values in cross-cultural research. Special attention is given to Shalom Schwartz's seminal cross-cultural research on values, which is a leading theory in understanding individual-level values. By considering the universal requirements of human existence, Schwartz (1992) identified basic motivations that characterize individuals in any society and derived 10 types of values that represent them. Thus, Schwartz moved from studying lists of values to developing a comprehensive set of motivational goals. This feature of Schwartz's theory is especially important in cross-cultural research, because sometimes a certain social behavior is predicted by one set of values in some cultural groups and by another set in others. The refined theory of basic human values was later presented (Schwartz, 2012), introducing the measurement of 19 values in different countries. The discriminative and predictive validity of the refined theory is explored by examining its associations with attitudes, beliefs, and behaviors. Hence, researchers have applied Schwartz's (1992; 2012) theory of basic values to explain individual differences in many domains and cultures. This presentation is intended to provide a collection of studies dealing with values from diverse theoretical viewpoints. The consequences of holding particular values priorities for emotions, behavior, subjective well-being, among others, are exemplified.

Gender differences in pathological jealousy

Andrea Lorena Stravogiannis, Hermano Tavares

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Pathological jealousy is defined as an irrational concern over the partner's fidelity. According to evolutionary psychology, sexual jealousy arises when one partner engages sexually with a third person and emotional jealousy arises when the partner forms a deep attachment with a rival. The objective is to investigate gender differences in a sample of patients seeking treatment for pathological jealousy. Study design was a cross-sectional quantitative comparison between 36 men and 54 women diagnosed with pathological jealousy. They completed measures about psychiatric disorders, personality, social adjustment, jealousy type (sexual or emotional), attachment and love style. Results showed that almost half of the total sample showed major depression as a concurrent disorder, and both groups showed elevated risk for suicide. Women scored higher on trait anxiety and aggressiveness, more past experiences of abuse, felt more upset about emotional jealousy, showed more avoidant and less secure attachment, less Eros and less Ludus love styles. On the other hand, men presented high levels of persistence and self-directedness, and showed high scores on state-anxiety level and felt more upset about sexual jealousy. Sex differences remain in a sample of pathological jealousy individuals. However, women presented peculiarities that should be taken into consideration when under treatment.

Keywords: monogamy; non-monogamy; emotional jealousy; sexual jealousy; individual differences

Funding: CAPES - Coordenação de Aperfeiçoamento de Pessoal de Nível Superior

The influence of Dark Triad and sociosexuality on mating and parenting efforts: A cross-cultural study

Francisco Moraes Junior, Zuzana Štěrbová, Marco Antonio Correa Varella, Maryanne

Fisher, Jaroslava Varella Valentova

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Life History Theory suggests that organisms trade-off between mating and parenting effort. Mating configures fast life history strategy (F-LHS) which is an adaptation to unpredictable, harsh environments with scarce resources. Parenting configures slow life history strategy (S-LHS), an adaptation to predictable environments with abundant resources. Sociosexuality, the tendency to uncommitted sexual variety, and Dark Triad (Machiavellianism, narcissism and subclinical psychopathy) compose positively F-LHS and negatively S-LHS. Yet, LHS, sociosexuality and the Dark Triad vary cross-culturally but the cross-cultural studies are rare. To test effects of sociosexuality and Dark Triad on

both mating and parenting effort, Dark triad Dirty Dozen, SOI-R and Mating and Parenting brief scales were responded online by 1,100 heterosexual Czech and Brazilian men and women. Two single stepwise regression models with parenting/mating effort were sex and population invariant. Sociosexuality, Machiavellianism and narcissism predicted positively mating effort, indicating that F-LHS is rather specific for self-centric individuals pursuing interpersonal manipulation. Parenting effort, however, was negatively predicted only by sociosexual attitude and psychopathy, indicating that S-LHS is rather specific to individuals endorsing sexual commitment, and who have higher empathy and affinity with children. Although related in the predicted directions, the predictors of Mating and Parenting efforts are rather specific.

Keywords: life history strategies, dark triad, sociosexuality, mating effort, parenting effort

Funding: CAPES

Short-term mate choice criteria in transgenders

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Most studies on human mate choice have focused on heterosexual individuals because predictions from evolutionary theories of sexual strategies focus on their consequences in terms of reproductive success. Though some researches have also been performed with samples of homosexual individuals, transgenders are a rarely investigated population in this domain. This study aimed to assess and compare short-term mate choice criteria in a sample of 120 individuals, composed by transgenders and cisgenders of both sexes, to investigate whether either biological sex or gender self-perception exerted more influence on the characteristics preferred by transgenders. The Mate Value Inventory was used to measure preferences for 19 traits related to physical attractiveness, personality, owning of resources and behavior. Binary logistic regression models indicated that male-to-female (MtF) transgenders and cisgender males had similar patterns of preference, suggesting a bigger role of biological sex on MtF transgenders' short-term mate choice criteria. Reversely, results indicated that the patterns of female-to-male (FtM) transgenders and cisgender females were statistically different. In this case, analysis of the significant variables of the model suggested that gender self-perception had a likely influence on FtM transgenders' short-term mate choice criteria. The preference pattern of cisgender females also corroborated predictions from Strategic Pluralism Theory.

Keywords: Transgenders; Mate choice; Sexual strategies

Beyond the hypothesis of "Third-party Punishment": an evolutionary explanation for the effectiveness of Restorative Justice procedures

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The evolutionary debate of the last decades is characterized by the centrality of the evolution of cooperation problem. One of the most pervasive models for explaining how cooperative behaviors among unrelated humans in single interactions might have developed is based upon group selection, and suggests that "altruistic punishment" behavior would have stabilized cooperation. However, the hypothesis of "third-party punishment" is insufficient to explain various forms of conflict composition in the anthropological record, by underestimating that in traditional communities many transgressions are resolved by means such as compensation, mediation, apologies, or by diffuse sanctions, such as gossip and ostracism. We suggest that the mutualistic "partner-choice" dynamics is a more parsimonious explanation, and to this end we critically review recent experimental findings of the behavioral literature on apologies and forgiveness. We argue that the mutualistic explanation allows to better understand why such behaviors may be more rewarding and satisfying to victims, and more socially valued, than punishing offenders. In so doing, we conclude that the importance of punishment behavior has been overstated in part of the literature, and that the mutualistic model is better suited to explain the mechanisms behind the effectiveness of Restorative Justice procedures in conflict resolution at the psychological level.

Keywords: Evolution of Cooperation; Third-party Punishment; Mutualistic Models; Restorative Justice.

High intrinsic motivations for artistic careers between 1987-2018: specificity and stability as evolved features of artistic propensities

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Artistic activities are prehistoric, universal, heritable, early-developed, easily learned, pleasurable/emotional, psychosocially beneficial, and analogous to aesthetic behavior of distant-related species, thus evolved expressions of human nature. Similarly, to curiosity and play, artistic behavior is hypothesized as an inherently-rewarding functionally-autonomous activity motivated rather intrinsically through an evolved and specific aesthetic motivational system. Corroborating literature is scarce and sample-restricted. We analyzed a massive real-life database from UNICAMP-Brazil which asked, between 1987 and 2018, 1.554.727 late-adolescent applicants about reasons for career application, including artistic (music, dance, drama, visual arts, literary studies) and non-artistic careers. Personal aptitude and fulfillment were categorized as intrinsic motives while social prestige, social contribution, lower concurrence, attractive job market and salary

were categorized as extrinsic motives. GLM with the year as a covariate showed that the combined artistic professions presented significantly higher intrinsic ($\eta^2 = 0.496$) and lower extrinsic ($\eta^2 = 0.722$) motivations than others. Among total applicants intrinsic motives were 2.67 times higher than extrinsic factors, but among artistic applicants were 11.1 times higher. The 32 years period interacted only with extrinsic motivations suggesting stability of the intrinsic ones. Thus, beyond the generalized intrinsic motivation for professionalization, artistic career-choice is also influenced by a specific, stable and strong motivational system.

Keywords: Arts; aesthetic behavior; motivation; career-choice; evolutionary psychology

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Extra-class artistic activities as an indicator of intrinsic motivation: evidence from a large Brazilian sample from 1987 to 2004

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Humans are 'artists'. Artistic motivation drives individuals to use their level of artisticity to actively/passively engage in aesthetically-oriented activities with some level of commitment. Similarly, to curiosity and play, artistic behavior is hypothesized as an inherently-rewarding functionally-autonomous activity motivated rather intrinsically through an evolved and specific aesthetic motivational system. Preferential freely-pursued activities reflect rather intrinsic motivation. Corroborating literature is scarce and sample-restricted. We analyzed a real-life database from UNICAMP-Brazil which asked, between 1987 and 2004, 674.699 late-adolescent applicants about (1) their most-participated, and (2) the highest time-spent, extra-class activity. The options of the most-participated extra-class activities included Artistic/cultural, Religious/esoteric, Political, and Sports. The options of the highest time-spent extra-class activities included Artistic-activities (Theater/cinema, Music, Dance, Art-craft/plastic-arts), Bar/disco, Reading, Sports, and Internet. On average, 26.50% of individuals mostly participated in Artistic/cultural activities, and 32.06% spent the longest period of free-time in Artistic-activities. These figures are around ten times higher than the period's percentage of artistic careers applicants (2.77%). GLM showed that, almost three-times more individuals (76.06%, 72.48%) among artistic-careers applicants prioritize art than the total of applicants. Prioritizing Artistic-activities remained stable over time. Results supported a specific, stable and intrinsically motivated prioritizing of artistic activities consistent with its possible evolved nature.

Keywords: arts; motivation; leisure-time; career-choice; evolutionary psychology

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Do women frequently use make-up to attract mates or to compete rivals?

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Humans are searching, choosing, attracting, engaging and competing for the most suitable available partners in the mating arena in order to increase reproductive success. For this, women use specific tactics, such as physical appearance modifications to alter appreciations by others. It is, however, not clear whether make-up use relates rather to intersexual attraction or intrasexual competition. We tested possible association between make-up use and self-perceived romantic desirability and facility to acquire mates (mate value), and female-female rivalry (intrasexual competition). A total of 526 heterosexual women ($M_{age} = 31.06$) answered online questionnaires about frequency of make-up use, money spent on make-up, mate value, intrasexual competition, and socioeconomic status. The regression showed that the frequency of make-up use was positively predicted only by self-perceived mate value, and only participants' socioeconomic status positively predicted monetary investment into make-up. We concluded that women who perceive themselves as having a greater ability to attract romantic partners use more make-up, even though they do not invest too much in it. Thus, women use make-up primarily as a tactic to enhance their physical appearance, retain more attention and alter appreciations from potential partners (intersexual selection), rather than as a way to compete with other females.

Keywords: intrasexual competition, intersexual selection, mate value, make-up

Funding: FAPESP

Rejection of behaviors by heterosexual women in idealized mates for long-term relationship

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The literature brings us significant data about preferences in human Sexual Selection, however, there is a possibility that our mate choice system may also have been selected by driving us away from fatal choices (compromising health issues, poor hygiene, and low reproductive potential). The objective of this study was to survey the behaviors that heterosexual women reject on idealized partners for long-term relationships. There were 1115 women, who participated, they were from 18 to 40 years old, self-declared heterosexuals. The women were asked through an online questionnaire to name the three behaviors, without sexual connotation, they rejected more in an ideal mate for long-term

relationship. The words from answers were classified into four categories: "Bad Companion"; "Bad Provider"; "Aggressiveness" and "No Answer". Participants rejected mostly the "Bad companion" category (72.26%) followed by "Aggressiveness" (16.11%), and "Bad provider" (9.68%) and 1.95% "No Answer". The most quoted behaviors were "being aggressive" (Aggressiveness), "being sexist" (Bad Companion), "being unfaithful" (Bad Companion) "being selfish" (Bad Provider). The results showed that the categories "Bad Companion" and "Aggressiveness" obtained more answers. Studying what is rejected shows us more than the reverse of what is preferred, bringing complementary data to the existing research.

Keywords: Mate selection; Rejection; Heterosexual women

Female sexual satisfaction as a tool for partner choice

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Recent studies on female orgasm have argued that it may have evolved as a way of selecting long-term partners with advantageous characteristics for direct offspring investment, such as greater care and empathy. A caring partner is supposedly able to give up on immediate pleasure and stimulate the female partner in an appropriate way. Higher care and empathy are rather feminine characteristics, and indeed, it was shown that homosexual women reach orgasm more often during sex than heterosexuals. This study aimed to investigate a possible influence of partner's characteristics on sexual satisfaction and frequency of orgasm in both heterosexual and homosexual women. In total, 44 women with a male partner and 47 with a female partner participated presentially in the study. The quality of sexual life was measured using the Female Sexual Function Index (FSFI) divided into six domains (desire, arousal, lubrication, orgasm, satisfaction and pain). Using factor analysis, partner characteristics were reduced into 3 factors: Commitment, Affective Investment and Attraction. Affective Investment predicted the total FSFI score and all its subscales in both heterosexual and homosexual women. Homosexual women reported significantly higher FSFI than heterosexual women. As predicted, female sexual satisfaction can cue to partner's partnering and parenting quality.

Keywords: Sexual Satisfaction, Homosexuality, Women.

Funding: CNPQ

Self-esteem as a primary predictor of happiness and life satisfaction: An evolutionary approach

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Life satisfaction and happiness are global life-success evaluations influenced by many evolutionary-relevant factors, such as relationship, parental, and socioeconomic status. We tested several evolutionary-relevant factors as potential predictors of happiness and life satisfaction. Overall, 748 Brazilians ($M_{age} = 29.25 \pm 11.81$) answered online a Demographic Questionnaire and scales measuring Subjective Happiness, Satisfaction with Life, Personal and Social Self-Esteem, Positive and Negative Affects, Big Five Personality Traits, Sociosexuality, Mate Value, and Depression Symptoms. Two stepwise multiple regression models were conducted with Happiness and Life satisfaction as dependent variables and the evolutionary-relevant measures as independent variables. Happiness was positively predicted by personal and social self-esteem and negatively predicted by depressive symptoms ($R^2 = .64$). Life satisfaction was positively predicted only by personal self-esteem ($R^2 = .37$). Self-esteem reflects self-acceptance and social adjustment which that leads to happiness and life satisfaction. Beyond life satisfaction, happiness seems to be influenced by both personal and social self-esteem components, demonstrating the importance of being socially recognized for individuals to feel happiness. We conclude that individuals rely mostly on self-evaluation to access their global life-evaluation, rather than directly on specific evolutionarily-relevant domains.

Keywords: self-esteem, happiness; life satisfaction; evolutionary approach

Aspects of life history in twins: an exploratory study

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The classic methodology of twin studies, widely refined in the last years of research, is an important tool to understand the influence of environmental and genetic factors in a particular behavior, as well as the interaction of these factors. Allied to this, Life History Theory can offer important contributions to the understanding of environmental influences in this context. In view of this and the emergence of these methodologies in the Brazilian national scenario, the present study investigated sociodemographic, zygosity and life history aspects among 76 monozygotic and 20 dizygotic pairs using an online platform and face-to-face interviews. The results show the reliability of the questionnaire used to determine genetic similarity between twins (zygosity). Sociodemographic data were used to compose a National Twin Database. In addition, results indicate that the time of study and the number of children positively correlate with slow life history strategies. It is suggested that for future research, a greater number of twins, mainly dizygotic, should be used in these investigations in order that other variables may be analyzed and heritability tests can be made.

Keywords: Twins Study; Zygosity; K-Factor; Life History Strategies

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Radical Behaviorism, Generalized Darwinism and Neolamarckism

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The selection by consequences concept describes the parallels between species, operant behavior and cultural practices, with natural evolution as a common mechanism. Bibliographic studies provided the identification of two different theoretical points: 1) analogy of selection by consequences between natural selection it's useless and is pure rhetoric; 2) selection by consequences must develop the relations between operant behavior and species considering that both evolve in a process of selection, but, in different levels. The actual goal of those who defend the concept of selection by consequences is to understand which entities are interactors and receptors in an operant and cultural level, considering the frontiers between behavior analysis and neurosciences. We believe that it's necessary to explore the possibilities and limits of those concepts of natural selection, and for that we discuss: 1) the position based in an evolutionary

synthesis centered in the gene and how this synthesis offers contributions to selection by consequences; 2) the position based on neolamarckist theory, defending evolutionary synthesis having another important element. These discussions are useful to the debate on philosophy of biology and on behavior analysis, reinforcing the relation between biology and social sciences.

Keywords: radical behaviorism; selection by consequences

Funding: CNPq

Jealousy among individuals in monogamous and non-monogamous relationships

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Research systematically shows lower overall jealousy in men than in women but higher sexual than emotional jealousy among men. However, it is not clear whether these differences maintain across different relationship types (monogamous versus non-monogamous). Via online questionnaires, 4,499 heterosexual cisgender individuals from Brazil (mean age = 28.9) indicated their relationship status (1,750 single, 2,025 in monogamous relationship, 402 in non-monogamous relationships), responded whether they were more distressed by imagined sexual or emotional infidelity of their partner/s, and they responded the Revised Anticipated Jealousy Scale. Men indicated lower overall jealousy and higher sexual than emotional jealousy than women. Further, individuals in monogamous relationships had higher sexual than emotional jealousy and, overall, they were more jealous than individuals in non-monogamous relationships; singles scored closer to monogamous individuals. Interestingly, non-monogamous men showed significantly lower sexual jealousy than other men, and their sexual versus emotional jealousy was comparable to women in monogamous relationships. Thus, sex differences in sexual versus emotional jealousy remain across relationship status groups. However, there is an important within-sex variation showing that reduced jealousy is an integral part of a specific sexual strategy which combines short and long-term relationships.

Keywords: monogamy; non-monogamy; emotional jealousy; sexual jealousy; individual differences

Funding: CNPq

Men practicing regularly physical activity have higher sociosexuality

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Sexual strategy was shown to vary with interpersonal differences in personality, age, gender, and few studies showed it also vary with physical activities (PAs). Physically active individuals can have access to more sexual partners, e.g., because of higher physical attractiveness. We aimed to test whether Sociosexuality (SOI) would be higher in men and women who practice PAs compared to sedentary participants. A total sample of 1,983 heterosexual Brazilians (1,251 women, M.Age=25.78, SD=9.59; 732 men, M.Age=27.84, SD=11.65) was grouped into Sedentary (don't practice PA regularly, 185 men, 396 women), Adhesion (practice PA regularly for less than 6 months, 31 Men, 85 Women) and Adherence (practice PA regularly for at least 6 months, 258 Men, 339 Women). Participants further responded online Sociosexual Attitudes (SOI-A) and Behavior (SOI-B) questionnaire. MANOVAs with age as a covariate showed that men in adherence phase reported higher SOI-A and SOI-B than sedentary men, and in women there was a non-significant trend in SOI-B. Regular physical activities, together with higher extroversion, sensation seeking and other characteristics can thus compose the unrestricted quantitative sexual strategy, which, in turn, is part of the fast life history strategy.

Keywords: Sociosexuality, Physical Activity, Adherence

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Sexual Excitement and Inhibition, and Sociosexuality, in men off different sexual orientations

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Sociosexuality refers to the degree an individual is prone to sex without emotional involvement. It is composed of attitude, desire, and behavior factors and measured by the SOI-R inventory; whose higher values indicate a greater propensity for casual sex - greater sexual unrestricted. More unrestricted individuals may have a greater degree of sexual arousal as part of their strategy of investing in casual relationships. We investigated the association between sociosexuality and sexual arousal in 568 men of different sexual orientations. Using an online platform, they responded the SOI-R and the Inhibition and Excitation Scale, composed of two sub-factors, excitation (SES), and inhibition (both internal – SIS1 – and external – SIS2 – causes of fear-related performance failure). The heterosexual group showed a positive correlation between total SOI and SES factor, a negative correlation between behavior factor and SIS2. The bisexual group showed a positive correlation between desire, total SOI, and SES factor, a negative correlation between attitude, total SOI and SIS2. The homosexual group showed a positive correlation between attitude, desire, total SOI, and SES, a negative correlation between total SOI and SIS2. Those results indicate that sexual arousal can work as an ontogenetic component in the engagement for casual relationships in more unrestrained individuals.

Keywords: Sociosexuality, Inhibition and Sexual Excitation, Sexual Orientation, and Men

Funding: PROPESP

Does sexual performance lead to different mate choice in homosexual men?

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Little attention has been given to the fact that male homosexuals assume different sexual performance roles, ranging from exclusively insertive to exclusively receptive, and how this preference affects the selection criteria of mate partners, therefore, we investigated those criteria on homosexual men of different sexual performances. In total, 934 Brazilian men were sampled. Using an online platform, the participants answered the Sociosexual Orientation Inventory-Revised (SOI-R), Instrument of Selection of Partners for both short and long-term strategies (ST and LT), assessing 18 criteria for mate choice, and their sexual performance preference. We found that insertives composed the minority performance, while versatile were the predominant in the sample. No significant differences between different performances were found for ST and LT for "beautiful", "attractive", and "inconstant". In general, homosexuals with different performances did not scored significantly from one another, except for "uncommitted" in ST and "independent" in LT, in which insertives scored significantly higher than others performances. On the other hand, SOI level was associated with higher scores on three criteria, such as "loving", "passionate", and "voluptuous" on ST. Despite that, sociosexuality level was more important than performance for preferences in both LT and ST, it is possible to note that for most criteria, insertives were choosier than the other performances. In summary, sociosexuality rather than sexual performance explained the differences on mate choice criteria in homosexual men.

Keywords: Evolutionary Psychology, homosexual mate choice, short-term strategies, long-term strategies, homosexuality, sexual performance, sociosexuality

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Narcissism and social self-esteem as two independent strategies using the same tactic: makeup use in women

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The Dark Triad personality characteristics (Machiavellianism, subclinical narcissism and psychopathy) are associated with anti-social manipulation to achieve own goals. Although socially undesirable, these characteristics are considered an evolved strategy which can increase individual's social and sexual success via many possible tactics. One of the tactics can be appearance modifications, such as make-up use, which can influence self- and other-perception and behavior, such as self-esteem or attractiveness ratings.

Here we tested whether expenses with and frequency of cosmetics usage are positively associated with Dark Triad traits among women. Online questionnaires were answered by 815 Brazilian heterosexual women (mean age = 29.3) about demographic data, Dark Triad, expenses with and use of cosmetics, personal and social self-esteem. Using linear regression, Narcissism and social self-esteem independently and positively predicted expenses with and frequency of cosmetics usage. Makeup usage thus serves as a tactic for interpersonal appraisal, desirability, and visibility, either as a rather manipulative and self-centric strategy, or an affiliative and socially desirable strategy. Thus, the makeup usage in women is only partially related to the Dark Triad, and to a specific type of self-esteem, both potentially increasing individual fitness.

Keywords: Narcissism; Dark Triad; Personality; Appearance Modification; Makeup

Forgetting in visuospatial working memory increases with memory load, retention interval and binding of information

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The integration (binding) of basic visual and spatial characteristics of environmental objects and their storage in visuospatial working memory (VSWM) are fundamental to our interaction with the environment. However, VSWM has limitations on its capacity and information declines over time. The aim of this study was to analyze the effect of memory load and retention time interval in the storage and maintenance of visual and spatial information, presented in isolation and in an integrated manner. We conducted an experiment where groups of participants memorized visual stimuli, spatial stimuli or visuo-spatial binding. Beside manipulating the type of memorized information, we also manipulated the memory load and the duration of the retention interval. The independent variable collected was proportion of correct responses. The results showed that the performance decreases as the retention interval increases, the number of elements increases or when information is integrated in VSWM. The results are discussed considering the adaptive value of VSWM in humans and other primate species.

Keywords: working memory, capacity, decay, binding

Funding: Capes

Behavior, Attitude, and Desire: Differences in sociosexuality of homosexual, bisexual, and heterosexual men

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Despite the concept of sociosexuality being related to individual and intrasexual variation on human sexual behavior, most studies focus on intersexual differences. Concerning intrasexual variation, a few studies on different sexual orientations showed that heterosexual men are more sexually restricted than bisexual and homosexual men. However, relationship status was not taken into account, once heterosexual's relationships are more socially acceptable. Therefore, we investigated the relationship between sociosexuality, sexual orientation, and relationship status. The sample consisted of 542 men, who answered the Revised Sociosexual Orientation Inventory, composed of three factors: behavior, attitude, and desire. Preliminarily, 62% of heterosexuals, 43% of bisexuals, but only 40% of homosexuals were in a relationship. There was an interaction between variables only in attitude factor. Single individuals were more unrestricted in desire and in the overall score (SOI) compared to those in a relationship. In all factors and SOI, heterosexuals were more restricted than homosexuals; and more restricted than bisexuals in behavior, desire, and SOI. Nevertheless, we stressed that the effect sizes ranged from small (attitude and desire) to moderate (behavior and SOI). We concluded that, although sexual orientation influences sociosexuality, small effects sizes suggest low real effects, and the necessity to investigate alternative variables.

Keywords: sociosexuality, sexual orientation, men

Funding: CAPES

Human time perception and temporal processing

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The human beings impose subjective, time-related interpretations on their existence, and the experience of time is a major aspect of lifespan development and evolution. The time perception (TP) is not associated with a specific sensory system, humans have a system, or several complementary systems that influence the TP. Basic mechanisms of interval timing and associative learning are shared by many animal species, and develop quickly in early life, particularly across infancy, and childhood. We propose a review of

subjective time concepts according to two dimensions: temporal direction and thematic field. Published, original-research, English-language articles from 1 January 2000 to 1 December 2018 were identified through a systematic literature search of the PubMed, CINAHL, PsycINFO, Web of Science, and Scopus databases. Articles describing investigations into the subjective time perceptions were included in this review. The TP is a product of evolution. Our perceptual systems, like our limbs and livers, have been shaped by natural selection. The concepts of subjective time perceptions build the foundation for a review of the literature regarding associations of subjective time with developmental outcomes in middle and late adulthood. The TP is handled by a highly distributed system involving the cerebral cortex, cerebellum and basal ganglia. One particular component, the suprachiasmatic nucleus, is responsible for the circadian rhythm, while other cell clusters appear to be capable of shorter timekeeping. There is some evidence that very short durations are processed by dedicated neurons in early sensory parts of the brain. Though directly experiencing or understanding another person's perception of time is not possible. The perception can be objectively studied and inferred through a number of scientific experiments. TP is a construction of the sapient brain, but one that is manipulable and distortable under certain circumstances. These temporal illusions help to expose the underlying neural mechanisms.

Keywords: time perception; circadian rhythm; psychophysics

The effects of social network interactions on the prosocial behavior of children during spontaneous situations and two economic games

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Humans' propensity to be prosocial is driven by our evolved insertion in social networks. With the goal of verifying and comparing the influence of this insertion on the prosocial behavior of children, we investigate, using social network analysis, the expression of these behaviors during spontaneous interactions and two economic games, Dictator-DG and Public Good Game-PGG. 56 hours of observation of 107 children (aged 5-6 and 10-11 years) was conducted in a public school in Natal/RN from February to December of 2018. Our results showed that: 1) the degree and network centrality of younger children were positively correlated with a higher offer and receiving of spontaneous prosocial behaviors (SPB), but negatively correlated to generosity in the DG. (2) The strength index (proximity frequency) was positively correlated with the offer and receiving of SPB only among younger children; 3) For older children it was found positive correlations only between affinity and generosity in the dictator's game and the gain in PBP. These results suggest that interactions between individuals and the position within their social networks

play a crucial role in prosocial behavior, moreover, socialization factors acquired within development seem to influence changes in these behaviors.

Keywords: Social network, prosocial behavior, children, development, economic games

Funding: CNPq

The opposites attract themselves? Big five and romantic partner idealization in heterosexuals and non-heterosexuals

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The big five personality traits seem to have evolved in human ancestors and these traits seems to influence preferences in mate choice. We investigated the relation between the participants' personality traits and what they idealize in a romantic partner. Participants (144 Brazilians - heterosexual men: $n = 36$; heterosexual women: $n = 38$; non-heterosexual men: $n = 38$; and non-heterosexual women: $n = 32$) were selected in CITY, answered the Big Five inventory (44 items), in addition to a self-report personality scale and scale of personality idealization in a romantic partner. Results showed that the score of a person in a personality trait influences the idealization of the same trait in a romantic partner. Extraversion, agreeableness, conscientiousness and openness showed a positive correlation between the individual score and what is idealized in a romantic partner, regardless of sex and sexual orientation. For non-heterosexual women all traits correlated positively with the ideal romantic partner extraversion, with exception for neuroticism, which presented a negative correlation. In conclusion, people in our sample seemed to look for similarity in the personality of a romantic partner. This pattern is, therefore, evident in romantic preferences, and may result in higher relationship satisfaction as has already been shown on previous studies.

Keywords: Personality; mate choice; sexual orientation; similarity

Funding: Capes

Implicit attitudes towards unfamiliar foods in obese adults

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Obesity is a worldwide health problem. Low dietary variety is an important feature of the obesogenic environment and can be related to expression of food neophobia, that is characterized by reluctance to consume unknown foods. In an evolutionary perspective, food neophobia has probably brought adaptive advantages to our ancestors, representing a defense against unknown foods that could be toxic. Food choices can be influenced by both explicit and implicit attitudes, that can be accessed through the Implicit Association Test (IAT). This study aimed to investigate the implicit attitude towards unfamiliar foods in Brazilian obese adults. A sample of 68 obese and 50 normal weight adults, from both sexes completed an IAT for food neophobia. To evaluate nutritional status, weight and height were measured and Body Mass Index (BMI) was calculated. The results showed that 78% of obese participants and 77.9% of normal weight participants had a strong preference for familiar foods. There was no significant difference in the score D, obtained from IAT, between groups. These findings suggest that the implicit attitude seem to have no direct relation to the BMI of our participants. The implicit attitudes appear to be a complementary tool for assessment of neophobic food behavior with an automatic response that does not require intentionality from the evaluated individual. In addition, our findings assist nutritionists for a better understanding the relationship between the acceptance of unfamiliar foods and nutritional status.

Keywords: Food neophobia; Implicit Association Test; Nutritional status; Obesity.

Use of objects to transport food by wild capuchin monkeys (*Sapajus libidinosus*)

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The coexistence of groups of capuchin monkey with humans can facilitate the emergence of unusual behaviors in natural environments, such as complex object manipulations. We describe 3 episodes of transport of food with objects by a group of *Sapajus libidinosus* in Brasilia National Park, during a 942-hour of "all occurrences" observation, over a period of 18 months. The episodes occurred separately and were performed by distinct individuals: an adult male, a young female and an infant. The individuals were seen transporting artificial plastic objects containing anthropogenic food (fruit peels and bone). In two occasions the food was already inside the object when the observation occurred. In the third, food was obtained on the floor and placed into the object for posterior transportation. In the first occurrences the food was consumed after transportation and the object manipulated for a while; in the last case, there was no consumption, with concomitant abandonment of the food and the object. Factors such as the presence of artificial objects and exotic foods possibly influenced the observed actions. We considered these episodes as possibly unprecedented tool use by wild capuchin monkeys which are relevant in terms of evolution of complex and functional behavior.

Keywords: transportation, tool use, capuchin monkeys

Funding: Capes

Construction of a scale of interactions between children and dogs - preliminary study

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Domestic dogs have been used in therapeutic settings. Our objective was to construct and perform preliminary studies on a scale designed to measure the interaction between children and their dogs, with potential application in therapeutic contexts and evaluation of child development. The scale, based in the literature and in the construction of new items, presented 42 items. After evaluation by judges the scale presented 40 items that were submitted to caretakers (N=118) of children aged 2 to 12 years. KMO (0.87) and Bartlett indexes ($p < 0.001$) indicated adequacy of the data to the factorial model. The resulting scale presented two factors: (I) Affective Interaction ($\alpha=0.91$) with 33 items that evaluate exhibition of affection, concern and care during child's interaction with the dog and (II) Educational Interaction ($\alpha=0.71$) with 7 items that evaluate the exhibition of educational and punitive behavior during child's interaction with the dog. The two factors correlated positively and significantly ($\rho=.39$, $p=.0001$) and with the total score ($\rho=.81$, $p=.0001$ and $\rho=.82$, $p=.0001$, respectively). We concluded that the instrument presented good validity and reliability indexes for application in the Brazilian population.

Keywords: Psychometric measure, Animal human interaction, Children behavior

Description of Parent-Child Relationship in Female Monozygotic Twins

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The Life History Theory (LHT) has been used to explain developmental trajectories and individual differences in physical or psychological aspects. Along with the methodology of twin studies, the LHT provides a wider framework for investigating human relationship on estimating the relative influence of heredity and the environment in human behavior such as parent-child relationship. The objective of the research was to describe the perception of co-twins regarding the relationship with their parents. The online survey sampled 8 monozygotic twin pairs, 7 dizygotic pairs, and 30 individuals whose co-twins did not participate, but for the analyses were considered only female monozygotic pairs. The twins answered the Parents Relationship Quality Scale (PRQS) to measure precisely

the proximity to both parents. Responses to PRQS were on average higher in the relationship with the mother than with the father, such as how much they did understand problems and concerns, gave attention, love, affection, teach about life, and how much effort they did dedicate. These results corroborate with the theory of Parental Investment, in which there are variations between females and males for investment spent in parental care, suggesting that higher quality of relationship with mothers must be related to mother's higher investment.

Keywords: Life History Theory; Parent-Child Relationship; Twin studies; Genetic; Environment; Development

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Generosity in Soccer Fans: test of a typological instrument

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Violence associated with soccer, or hooliganism, is a phenomenon that causes disruption to society. The dynamics of hooliganism can be explained by the theory of parochial altruism, and its investigation through economic games is usually done by measuring the individual's generosity through monetary donations. However, there has been criticism to this approach, given that monetary donations may be less representative of the intensity of group affiliation, and hence of the motivations underlying parochial altruism. Conversely, physical effort may reflect the inherent costs to altruism more closely. This project adopts the effort-based decision-making paradigm, where local team soccer fans will participate in a variation of a dictator's game whose donations will be made by physical effort and not by currency. Thus, preliminary findings of a pilot study are presented, in which the method described above was tested in a baseline sample of undergraduates. It is concluded that the method is valid to study parochial altruism. Further steps will involve the application of the same method to soccer fans. Finally, it is discussed how this method can contribute to our understanding of hooliganism from an evolutionary perspective.

Keywords: Parochial Altruism; Typology; Soccer fans

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Descriptive analysis of Extraversion and Neuroticism in female monozygotic twins

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Extraversion and Neuroticism are two important dimensions of personality that are usually negatively correlated. Individuals who score highly on Extraversion are more likely to show an openness to bond with other people, an adaptive value of this trait. Higher scores on Neuroticism, however, indicate traits like anxiety and emotional instability. Considering the systematic tendency of oppositeness of these two dimensions, we aimed to describe the differences between twin pairs on Extraversion and Neuroticism. Out a total sample of 92 individuals, 14 pairs of female monozygotic (MZ) twins completed the Short Form Scale of Descriptors of Personality in an online platform. The twins considered themselves anxious, but averagely emotionally unstable and temperamental. On the other hand, they considered themselves highly extroverted and communicative, and barely quiet. Due to the small sample size inferential statistics were not performed, however, it is interesting to notice the agreements between the sisters concerning their personality traits, whose scores had approximate values. The limited sample size is a limitation to the present research, but future studies may address more precisely how female MZ twins score highly in theoretical opposite personality traits, such as anxiety and extraversion.

Keywords: monozygotic, Red5, anxiety, personality traits, twins

Effect of consumption of luxury and popular cars on the perception of social dominance

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The evolutionary perspective can help to understand the factors that permeate the consumption of goods and services and the effect of this decisions on the perception of others. The aim of the study was to verify if the ownership of luxury and popular cars affects people's perception of the level of social dominance of the owners of these automobiles. To do so, 171 participants (93 females and 78 males) evaluated four stimulus subjects of the opposite sex distributed in two experimental conditions: popular car or luxury car. Each stimulus subject was described with information regard a profession, a hobby and with a description of an automobile in accord to its experimental condition (Luxury or popular). Participants were asked to assess the level of social dominance expected for the stimulus subjects using the Social Dominance Scale. The results showed that the stimulus subjects who presented luxury automobiles were described with a higher level of social dominance ($\text{Partial-}\eta^2=0,116$). Research suggests that consumer choices seem to influence the perception of social dominance that individuals present within their social group. These findings contribute to the understanding of the impact of consumption decisions on third parties, as well as provide clues about the factors that may motivate this type of decision.

Keywords: Social dominance; evolutionary perspective; Consumption

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Developmental Fluidity on Sexual Orientation in Monozygotic and Dizygotic Twins

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The Klein Sexual Orientation Grid (KSOG) allows the assessment of sexual orientation on an ongoing basis, ranging from exclusive homosexuality to exclusive heterosexuality. The KSOG evaluates seven dimensions measured in the past, present, and ideal, being they: Sexual Attraction, Sexual Behavior, Sexual Fantasies, Emotional Preference, Social Life Preference, and Sexual Identity. We aimed to describe the fluidity of sexual orientation in adult twins who answered the KSOG using an online platform. 92 monozygotic and dizygotic twins of both sexes and from different Brazilian states fulfilled this scale. In the Past, twins described their preferences in four out of five KSOG dimensions as predominantly “the opposite sex/solely heterosexual”. Only Social Preference was described for “both sexes” equally in both past and present. In the present time, a slight decrease on the frequency of the “solely the opposite sex/predominantly the opposite sex” is observed in all items, indicating a certain degree of flexibility in sexual orientation. Despite the small sample size, future studies may offer a broader view to better comprehend the sexual orientation fluidity along the life-cycle, including among the twin population, in which studies indicate genetic influences on the sexual orientation.

Keywords: twins, Klein scale, KSOG, development, sexual orientation

Amount of aggression in the contest for food correlates with the attractiveness not with the energetic quality

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What food features are key to the contest aggression? We performed a naturalistic experiment with the presentation of food over an open platform for 30 capuchins (*Sapajus libidinosus*) in the Bosque Bougainville (Goiânia-GO). The foods were selected because they had increasing Kcal. Seventeen food types were presented in two sessions. Scans 1x1 were collected from the individuals besides all-occurrences of aggressions without or with touch. The number of individuals average per scan (nscan) in all sessions was 4.53. The percentage of food consumed (%consumed) did not correlate with the nutritional values of the food, so other factors such as preference of the food itself, seem to influence consumption. We did a linear-model with the DV total number of aggressions

(NAG), and IV percentage consumed of the food, Kcal and nscan. The best fit model was with all variables with $R^2=0.61$, but only the %consumed was marginally significant in the model. Considering the aggressions without touch, the best fit model was significant with $R^2=0.56$ with the variables %consumed and nscan, but only nscan was significant in the model. Aggressiveness in this context seems to have responded better to preference of food and quantity of individuals than the energetic value of food.

Keywords: Food Contest Aggression, Aggressiveness, naturalistic experiment

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Can I get what I want? Preferences and actual choice in a speed-dating

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In humans ancestors mechanisms evolved for reproduction, such as mate choice. In this context each individual has a mate value that can be correlated with idealization and choice of the romantic partner. We investigate whether self-perception influences idealization of romantic partner and actual choices in a speed-dating, and if ideal partner differ from real choice in three domains. We hypothesize that the person mate value predicts the score for ideal partner and for partner choose in the speed-dating and that the score attributed for ideal partner in each domain would be higher than those of real partner. Men ($n = 26$) and women ($n = 23$) answered a self-perception questionnaire as a romantic partner, that was also used to rate the ideal partner, which evaluate nine individual characteristics in three domains (attractiveness, social, and resources). During the speed-dating, each participant interacted for three minutes with each person (until 10 opposite sex people). Then they choose a partner for short-term and one for long-term. Results showed that the person mate value predict scores for ideal partner in the short and in the long-term context. However, for actual choices this prediction wasn't observed. For short-term, people idealized higher scores in attractiveness than in the real choice, and the chosen partners scored more in the social domain than idealized ones. For long-term we found no difference. We concluded that people adjust preferences during a real choice and this effect seems to be stronger for short-term mating.

Keywords: Mate value, sexual selection, real partner, individual differences.

Funding: Capes

Who uses makeup? Personality and makeup use in Brazilian women

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Appearance modifications, such as make-up use, can be used as tactics to influence self- and other-appreciation, such as self-esteem and attractiveness ratings. This tactic can be used strategically by individuals with specific personality configurations. However, studies about the relationship between makeup use and personality are ambiguous, indicating individuals either with higher neuroticism or extroversion using more make-up. What kind of women are more inclined to use make-up in Brazil? The aim of this study is to investigate if there is a relationship between Big Five personality traits and frequency of makeup use and expenses with makeup per month. In total, 526 Brazilian women ($M_{age} = 31.06$) answered online the Big Five Personality Inventory and questionnaire about frequency of makeup use and monthly expenses with makeup. Correlations between the variables, controlling for age, length of relationship, and mandatory use of makeup at work, showed a positive association between frequency of makeup use and expenses with makeup and Extroversion. As extroverts are highly communicative and socially active, make-up can thus be used as a tactic to impress and hold attention of others, while decreasing potential criticism and negative evaluations. This can ultimately increase individual social, sexual and reproductive success.

Keywords: cosmetics, make-up, personality, extroversion

Funding: Universidade de São Paulo

Life history strategies in pairs of monozygotic and dizygotic twins

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Life History Theory describes and explains the development strategies of organisms according to their environmental and individual (including genetic) conditions. The present study aimed to describe the development strategies (i.e. fast or slow) in a Brazilian sample of twins. In an online platform, 13 pairs of monozygotic and 12 dizygotic twins of both sexes answered the Mini-K Inventory. The sample presented higher scores for items related to maternal affection, as well as the support received from and offered to friends. Conversely, participants tended to respond negatively to items related to religious

practice, intimacy for sexual intercourse, and a close relationship with their fathers. There was more divergence between co-twins for the item related to the preference for having a single emotional relationship. Co-twins presented greater convergence in the items referring to keep the contact with friends and to give up in the face of difficulties. Considering that the sample was composed mainly of female and undergraduate students, we observed the tendency of this population to the slower life history strategy, especially for interpersonal relations. The limitations of the study for generalization to the twin population due to the number of participants are discussed.

Keywords: Life History Theory, twins, Mini-K, development.

Preliminary description of familiar and educational environments of Monozygotic and Dizygotic twins

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Twin psychological research is relatively scarce in Brazil, despite being well developed in many countries around the world. In attempt to investigate how twins are raised in a Brazilian sample, we recruited 14 monozygotic (MZ) and 11 dizygotic (DZ), all adults, to answer questions about their familiar/educational environment in a 5-point Likert scale, such as growing up together, living in the same house, raised on the same family, studied in the same classroom, wore the same clothes during infancy, wear the same clothes on adulthood, and shared the same toys during infancy. Despite non-significant differences, MZ twins scored higher than DZ on all measures. Standard deviations were low for all measurements, except for studying in the same classroom and wearing the same clothes during infancy. In both MZ and DZ there was a decrease in the use of the same clothes from infancy to adulthood, however MZ pairs scored higher on both measures. Relevantly, MZ shared significantly more toys among themselves than DZ did. The changes in the course of life affected how both MZ and DZ twins dressed themselves, however this difference is not significant. Playing with the same toys must be a product of the fact that MZ twins are same-sex siblings, while DZ twins played less with the same toys because some of them were sex-opposite. Limited sample size is a constraint in the present study, however, the environmental similarity between MZ and DZ twins may be tested on large samples to evaluate how the environment contributes to MZ and DZ differences.

Keywords: Monozygotic twins, Dizygotic twins, familiar environment, educational environment.

A dual-inheritance based social-cognitive model of theism: initial evidence from a Brazilian sample

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A negative correlation between analytic cognitive style and theism, the belief in God(s), has been found in an amounting number of studies in recent years, along with experimental evidence of reduced theism caused by the induction of a reflective mindset, all in WEIRD samples. The trend is being challenged by the latest findings that “analytic atheism” is a cross-culturally weak and fickle phenomenon and that the correlation even turned to positive in a British college sample – more analytic individuals exhibited more theism. Departing from this purely cognitive model, we propose a social-cognitive model of theism, arguing that the unexpected positive correlation may be caused by motivated reasoning elicited by a social identity threat in religiously socialized highly analytic individuals. In a Brazilian college sample (n=220), we found evidence of relevant effects on individual theism of both analytic cognitive style (CRT) and exposition to religious Credibility-Enhancing Displays (CREDs), a dual-inheritance based construct. Then, by contrasting predictions from the purely cognitive and the social-cognitive model for the discrepancy between stated theism and guessed average theism in the group, we present initial evidence favoring the social-cognitive model of theism – an interaction CRT x CREDs – and critically discuss the validity of that new finding.

Keywords: Dual-inheritance theory, social-cognition, theism

Do brothers recognize emotions equally?

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Expressing emotions is a behavioral strategy for the maintenance of group life, in species that present them. Their expression carries information to both individual: who expresses them and who perceives them, creating a relation between the two, called social interaction. Parental practices influence the ability to recognize children's emotions, but children may react differently to the same interactions, and there are reports that they have different relationships with parents. The objective of this work was to identify if there are differences in the recognition of emotions between brothers raised together by the same parents. Data were collected from two schools in Natal, Rio Grande do Norte. Participated in 11 pairs of siblings, children between 5 and 10 years of age. The children participated

in an empirical test in which pictures of other children expressing the 6 basic emotions were presented and they would say which emotion was being expressed and could have 3 chances for each emotion. We have observed that siblings of the same parents who were raised together, score similarly on the empiric test. Evolutionarily, there would be a decrease in competition between siblings, influencing their survival rate and maintaining the bond. Such results can be understood in terms of genetic proximity and in terms of parental practices in the breeding environment.

Keywords: Emotions; Family; childhood

Using non-verbal communication to solve behavior problems in dogs

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Positive punishment is an important evolutionary factor because it keeps individuals alive. A consequence of this natural selection is that humans tends to teach by positive punishment using verbal communication, however dogs just understand non-verbal communication and use verbal communication as an association with some action. We will test two different hypotheses. The first states that the use of verbal communication generate behavioral problems in dogs. The second states that if people do not use verbal communication and stay aware of their non-verbal communication, they will solve behavior problems in dogs. The first hypothesis refers to the prevention and the second one to the solution of behavior problems. The training consists in two-hour long intervention in the house of people who contact a dog trainer to solve behavior related problems, such as barking, leaps, destruction, biting, aggression, urination, and defecation in inappropriate places. The data will be collected using three questionnaires: one before the intervention, other at the end of training and the third one-week later. We will use data from one hundred individuals of any age; the first hypothesis will be tested with dogs younger than four months and the second hypothesis will be tested with all dogs treated.

Keywords: verbal communication, non-verbal communication, human-dog communication, behavior problems, training